

Claims

1. (Amended) In a Carrier Interferometry (CI) communication system, a method for communicating comprising:
 - providing for ~~redundant~~ CI modulation of at least one data symbol onto a plurality of carrier signals, the carrier signals having different values of at least one diversity parameter,
 - providing for coupling the ~~redundantly~~ CI modulated carrier signals into at least one communication channel from at least one transmitter element,
 - providing for reception of the coupled carrier signals via at least one receiver element,
 - providing for spatial processing of the received signals with respect to at least one diversity parameter space to separate at least one desired data symbol from at least one interfering signal.
2. (Amended) The CI communication method recited in claim 1 wherein the step of providing for ~~redundant~~ CI modulation includes providing for weighting of the carrier signals to generate a predetermined superposition signal.
3. (Amended) The CI communication method recited in claim 1 wherein the steps of providing for ~~redundant~~ CI modulation and providing for reception comprise at least one of a set of transmission protocols including time-division multiple access, code-division multiple access (CDMA), frequency-division multiple access, time-offset multiplexing, frequency-hopping spread spectrum, orthogonal frequency division multiplexing (OFDM), multi-tone CDMA, multi-carrier CDMA, OFDM-CDMA, synchronized CDMA, and phase-division multiplexing.
4. (Original) The CI communication method recited in claim 1 wherein the step of providing for spatial processing includes providing for multi-channel detection.
5. (Original) The CI communication method recited in claim 1 wherein the step of providing for spatial processing includes providing for at least one superposition of the received signals.
6. (Amended) A CI transmission system including:
 - a carrier-signal generator capable of generating a plurality of carrier signals,

a modulator capable of redundantly modulating at least one information signal onto a plurality of the carrier signals wherein the improvement comprises at least one of the carrier-signal generator and the modulator being adapted to provide the modulated carrier signals with an incremental phase relationship that facilitates separation of multiple information signals modulated onto the same carrier signals by orthogonally positioning data-modulated pulse waveforms produced from a superposition of the carrier signals, and

a transmitter having at least one transmitter element, the transmitter being capable of coupling the modulated carrier signals into at least one communication channel.

7. (Original) The CI transmission system recited in claim 6 wherein the carrier-signal generator is adapted to generate carrier signals that are each distinguished by different values of at least one diversity parameter.
8. (Original) The CI transmission system recited in claim 6 wherein at least one of the carrier-signal generator, the modulator, and the transmitter includes a spatial processor adapted to effect spatial processing of at least one of the modulated carrier signals.
9. (Amended) A CI transmission system including:
 - a carrier-signal generator capable of generating at least one carrier signal,
 - a modulator capable of redundantly modulating at least one information signal onto the carrier signal(s) wherein the improvement comprises at least one of the carrier-signal generator and the modulator being adapted to provide the modulated carrier signal(s) with a phase relationship that facilitates separation of multiple information signals modulated onto the same carrier signal(s) by orthogonally positioning data-modulated pulse waveforms produced from a superposition of the carrier signals, and
 - a transmitter having at least one transmitter element, the transmitter being capable of coupling the modulated carrier signals into at least one communication channel.
10. (Original) The CI transmission system recited in claim 9 wherein the carrier-signal generator is capable of generating carrier signals that are each distinguished by different values of at least one diversity parameter.

11. (Original) The CI transmission system recited in claim 9 wherein at least one of the carrier-signal generator, the modulator, and the transmitter includes a spatial processor adapted to effect spatial processing of at least one of the modulated carrier signals.
12. (Amended) A CI receiver system including:
 - a receiver having at least one receiver element, the receiver adapted to be responsive to a plurality of information-modulated carrier signals from at least one communication channel to generate a plurality of received modulated carrier signals, and
 - a combiner coupled to the receiver, the combiner capable of combining the received modulated carrier signals to separate at least one desired information symbol from at least one interfering signal, and
 - a multi-channel detector adapted to separate at least one desired signal from at least one interfering signal.
13. (Original) The CI receiver system recited in claim 12 wherein at least one of the receiver and the combiner includes a spatial processor adapted to effect spatial processing of at least one of the received modulated carrier signals.
14. (Amended) The CI receiver system recited in claim 12 wherein the at least one desired signal comprises ~~combiner includes a multi-channel detector adapted to separate at least one desired combined signal from at least one interfering signal.~~
15. (Amended) The CI receiver system recited in claim 12 wherein the at least one desired signal comprises ~~combiner includes a multi-channel detector adapted to separate at least one desired received modulated carrier signal from at least one interfering signal prior to combining.~~
16. (Amended) A CI receiver system including:
 - a receiver having at least one receiver element, the receiver capable of being coupled to at least one communication channel, the receiver adapted to be responsive to ~~at least one carrier signal~~ a plurality of CI-modulated carriers modulated with a plurality of information signals to generate at least one set of interfering information signals therefrom, and

a multi-channel detector coupled to the receiver, the multi-channel detector adapted to separate the interfering information signals.

17. (Original) The CI receiver system recited in claim 16 wherein at least one of the receiver and the multi-channel detector includes a spatial processor adapted to effect spatial processing of at least one of the received modulated carrier signals.